



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,118	09/26/2000	MICHAEL S. DARSILLO	99078X206650	5497

7590

05/12/2003

MICHELLE B LANDO
CABOT CORPORATION
BILLERICA TECHNICAL CENTER
157 CONCORD ROAD
BILLERICA, MA 01821-7001

EXAMINER

BERNATZ, KEVIN M

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 05/12/2003

19

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/670,118	Applicant(s) DARSILLO ET AL.	
	Examiner Kevin M Bernatz	Art Unit 1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,7,27-30,33 and 44-57 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,7,27-30,33 and 44-57 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s). <u>19</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Response to Amendment

1. Amendments to claims 1 – 5, 7, 27 – 30, 33, 44 – 53 and 55 - 57, filed on April 7, 2003, have been entered in the above-identified application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Request for Continued Examination

3. The Request for Continued Examination (RCE) under 37 CFR 1.53 (d) filed on April 7, 2003 is acceptable and a RCE has been established. An action on the RCE follows.

Specification

4. The disclosure is objected to because of the following informalities: there appears to be a typographical error on page 10 of the specification, as acknowledged by applicants during the interview on April 30, 2003 (see attached interview summary). Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. Claim 54 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 54 depends on a cancelled base claim, and therefore, there is insufficient antecedent basis for the entire claim. Applicants' agent acknowledged that claim 54 should have been cancelled during the interview on April 30, 2003 (see attached interview summary).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 – 3, 5, 7, 27, 33, 44 – 49, 52, 53 and 55 – 57 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagamine et al. (U.S. Patent No. 5,171,626).

The examiner notes that Monie (U.S. Patent App. No. 2002/0164464 A1) is cited as supporting evidence in the following rejection.

Regarding claim 1, Nagamine et al. disclose an ink-jet recording medium (*Title*) comprising a substrate having a glossy coating thereon (*col. 3, lines 27 – 30 and Example 3, coating solution 3-b*), the glossy coating comprising alumina particles and a binder (*col. 4, lines 40 – 44 and Example 3*), and wherein the alumina particles have a

Art Unit: 1773

surface area of about 30 – 80 m²/g (*col. 4, lines 1 – 3 and lines 45 – 49; and Example 3, coating solution 3-b*).

It has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prima facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, Nagamine et al. disclose a method of forming the alumina particles (*col. 3, lines 43 – 54*), but does not state whether these particles are fumed alumina or not. However, the Examiner notes that one of ordinary skill in the art would recognize that these particles are fumed alumina particles, as evidenced by Monie (*Paragraph 0009 – “[t]he use of fumed alumina in inkjet coatings is known as shown, for example, in U.S. Pat. No. 5,171,626”, i.e. Nagamine et al.*).

Therefore, in addition to the above disclosed limitations, the presently claimed property of the alumina particles being “fumed alumina” would have inherently been present because one of ordinary skill in the art would recognize that the particles referred to in Nagamine et al. are inherently “fumed alumina” particles, as evidenced by the Monie recitation.

Furthermore, regarding the limitation “the glossy coating has a 75° specular gloss of about 15% or more”, the Examiner deems that at least the embodiment presented in example 3 would inherently meet this limitation, given that the outer coating layer (coating layer b) comprises a substantially identical composition to the claimed product (i.e. an inkjet recording medium comprising a glossy coating comprising fumed alumina of a 50 nm particle size and a 60 m²/g surface area).

Regarding claims 2 and 3, Nagamine et al. disclose substrates meeting applicants’ claimed limitations (*col. 3, lines 31 - 33*).

Regarding claims 27 and 33, Nagamine et al. disclose a method of making an ink-jet recording medium meeting applicants’ claimed limitations, including the solids content of alumina in the coating composition (*col. 6, lines 45 – 59 and Examples*).

Regarding claims 5 and 49, Nagamine et al. disclose embodiments meeting applicants’ claimed particle size limitations (*Examples*).

Regarding claims 7, 44, 45, 52 and 53, Nagamine et al. disclose alumina to particle binder ratios meeting applicants’ claimed limitations (*col. 6, lines 5 - 14*).

Regarding claims 46 and 55, the Examiner deems that at least embodiment 3 inherently meets the claimed 75° specular gloss limitation for the reasons cited above.

Regarding claims 47, 48, 56 and 57, the Examiner deems that at least embodiment 3 inherently meets the claimed mercury intrusion volume limitations, since the claimed and prior art products are substantially identical in structure and intended use, and as noted Paragraph 7 of the Office Action mailed November 1, 2002 (Paper No. 14), the mercury intrusion volume is simply a measurement of the porosity of the film.

Claim Rejections - 35 USC § 103

9. Claim 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Nagamine et al. as evidenced by Monie as applied above, and further in view of Chao et al. (U.S. Patent No. 6,468,395 B1).

Nagamine et al. as evidenced by Monie are relied upon as described above.

Nagamine et al. as evidenced by Monie fail to disclose a solid fractions meeting applicants' claimed limitations.

However, Chao et al. teach that in coating compositions for ink-jet recording media, the solid fractions is a known cause-effective variable in terms of the coating viscosity and should be controlled to be 60% or less (*col. 3, lines 11 – 14*). The Examiner deems it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the weight percent solids in the coating composition through routine experimentation, given the teaching in the art that the solids content is a known cause-effective variable in terms of

Art Unit: 1773

the viscosity of the coating solution. *In re Boesch*, 205 USPQ 215 (CCPA 1980), *In re Woodruff*, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Nagamine et al. as evidenced by Monie to use a coating composition possessing a weight percent solids meeting applicants' claimed limitations as taught by Chao et al. in order to obtain the desired viscosity for the coating composition.

10. Claims 29, 30, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagamine et al. as evidenced by Monie as applied above, and further in view of Kruse (U.S. Patent No. 5,198,306).

Nagamine et al. as evidenced by Monie are relied upon as described above.

While Nagamine et al. as evidenced by Monie disclose a broad range in particle sizes (5 nm – 5000 nm), Nagamine et al. fail to provide any examples or explicit motivation to utilize particle sizes meeting applicants' claimed limitations.

However, the exact particle size is deemed a cause-effective variable in terms of the surface properties, ink absorption, reflectance/transmittance and processing ease. In addition, the Examiner notes that Kruse disclose that fumed alumina having a particle size of ~ 200 nm are desirable because the "scattering of light is minimized and the coatings remain relative clear" *col. 5, lines 40 – 47*). The Examiner deems it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the alumina particle size through

routine experimentation, especially given the teaching of the broad preferred range for the same intended use as applicants – i.e. ink-jet recording media.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Nagamine et al. as evidenced by Monie to use alumina particles meeting applicants' claimed particle size limitations, since the optimization of a known cause-effective variable is within the capabilities of one having ordinary skill in the art.

11. Claims 1 – 3, 5, 7, 27 – 30, 33, 44 – 53 and 55 - 57 rejected under 35 U.S.C. 103(a) as being unpatentable over Kurabayashi et al. (U.S. Patent No. 5,561,454) in view of Kobayashi et al. (U.S. Patent No. 5,910,359) and Okumura et al. ('001), and further in view of one or more of: Kruse ('306), Dransmann et al. (U.S. Patent No. 5,911,855), Handbook of Fillers (2nd Ed, page 131), and Mochizuki et al. (U.S. Patent No. 6238,784 B1).

Regarding claims 1 and 46, Kurabayashi et al. disclose an ink-jet recording medium (*Title*) comprising a substrate having a glossy coating thereon (*Figure 5, elements 71 and 72; and col. 6, line 64 bridging col. 7, line 2*), and the glossy coating comprising alumina particles and a binder (*col. 3, lines 34 - 42; and Examples*).

Kurabayashi et al. fail to disclose a 75° specular gloss meeting applicants' claimed limitations.

However, Kobayashi et al. teach a glossy ink jet recording sheet comprising a multilayered structure, where the 75° specular gloss is controlled to be above 70%

inorder to produce an ink-jet recording medium capable of high quality images (*col. 7, lines 7 – 10 and col. 14, lines 29 – 35 and 59 – 64*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kurabayashi et al. to produce an ink-jet recording medium possessing a 75° specular gloss meeting applicants' claimed limitations as taught by Kobayashi et al. since such a recording medium is capable of high quality images.

Neither Kurabayashi et al. nor Kobayashi et al. disclose a surface area of the alumina meeting applicants' claimed limitations, though Kurabayashi et al. disclose examples having a range of surface areas from 18 – 400 m²/g (*examples*).

However, Okumura et al. teach that in ink-jet recording, the surface area of the ink-absorbing particles can be controlled to values overlapping applicants' claimed limitations inorder to control the color density and ink absorption properties (*col. 3, line 60 bridging col. 4, line 18*). The Examiner deems it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the surface area of the alumina particles through routine experimentation, especially given the teachings in Okumura et al. regarding the effects of surface area on the color density and ink absorption of the particles.

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kurabayashi et al. in view of Kobayashi et al. to utilize alumina particles possessing a surface area meeting

Art Unit: 1773

applicants' claimed limitations as taught by Okumura et al. since the optimization of a known cause-effective variable is within the capabilities of one having ordinary skill in the art.

None of the above references explicitly teach using fumed alumina instead of "alumina", as taught by Kurabayashi et al. (*col. 3, lines 34 - 42 and Examples*).

However, the Examiner deems that alumina, hydrated alumina and fumed alumina are all known equivalents in terms of ink-absorbing particles for use in ink-jet recording media. The Examiner notes Kruse (*col. 5, lines 32 – 48: "The hydrophilic coatings made according to the invention sorb ink ...of hydrated alumina and/or silica ... A preferred alumina is ... a high surface area (e.g. 100 m²/g) fumed alumina having low average particle size (about 200 nm) so that scattering of light is minimized and the coatings remain relatively clear"*), Mochizuki et al. (*col. 2, lines 45 – 61: "an ink absorption layer containing solid fine particles ... wherein the solid fine particles are ... alumina, hydrated alumina, ..."*), and Dransmann et al. (*col. 2, lines 6 – 8 and lines 42 – 51: "Particularly appropriate for this purpose are aluminum oxides, pyrogenic aluminum hydroxides..."*) where "pyrogenic" is equivalent to "fumed" (*Handbook of Fillers, page 131: "pyrogenic or thermal (commonly known as fumed ..."*).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. In the instant case, alumina, hydrated alumina and fumed alumina are equivalents in the field of ink absorbing particles for use in ink-jet recording.

Art Unit: 1773

In re Fount 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kurabayashi et al. to use fumed alumina particles, since substitution of known equivalents is within the knowledge of one of ordinary skill in the art.

Regarding claim 2, Kurabayashi et al. disclose substrates meeting applicants' claimed limitations (*col. 2, lines 41 – 42 and col. 3, lines 19 - 20*).

Regarding claim 3, PET is a known plastic for use as a substrate ink-jet recording media, as evidenced by Kobayashi et al. (*col. 7, lines 22 – 27*). Kobayashi et al. further teach that PET is transparent and resistant to radiant heat when the sheet is used for OHP or back light displaying. Since PET is a known substrate material useable in ink-jet recording media it would have been obvious to one of ordinary skill in the art at the time the invention was made to select PET, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice, especially if a transparent sheet possessing resistance to radiant heat is necessary. *In re Leshin*, 125 USPQ 416.

Regarding claims 27, 28, 33 and 55, Kurabayashi et al. disclose a method of making an ink-jet recording medium meeting applicants' claimed limitations, including the solids content of alumina in the coating composition (*col. 8, lines 41 - 61*). The Examiner deems that it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the solids

Art Unit: 1773

content of alumina through routine experimentation, especially given the knowledge in the art that the solids content effects the viscosity of the coating composition. It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant(s) invention to modify the device of Kurabayashi et al. to use a solids content of alumina meeting applicant(s) claimed limitations, since the optimization of a known cause-effective variable is within the capabilities of one having ordinary skill in the art.

Regarding claims 5, 47 – 49, 56 and 57, Kurabayashi et al. fails to explicit disclose a range in particle sizes meeting applicants' claimed limitations, though Kurabayashi et al. does disclose examples with particle sizes ranging from 0.5 – 12 μm (*Examples*). The Examiner deems that it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the alumina particle size through routine experimentation, especially given the teachings in Kruse regarding a preferred particle size of ~200 nm because the "scattering of light is minimized and the coatings remain relative clear" *col. 5, lines 40 – 47*). It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant(s) invention to modify the device of Kurabayashi et al. to use ink absorbing particles meeting applicant(s) claimed particle size limitations, since the optimization of a known cause-effective variable is within the capabilities of one having ordinary skill in the art.

Regarding claims 7, 44, 45, 52 and 53, Kurabayashi et al. disclose alumina to particle binder ratios meeting applicants' claimed limitations (*col. 3, line 66 bridging col. 4, line 1; and Examples*).

Art Unit: 1773

Regarding claims 47, 48, 56 and 57, as noted Paragraph 7 of the Office Action mailed November 1, 2002 (Paper No. 14), the mercury intrusion volume is simply a measurement of the porosity of the film, and Okumura et al. disclose the importance of optimizing the pores for good ink and pencil absorption (*col. 10, line 55 bridging col. 11, line 7*). The Examiner deems that it would have been obvious to one having ordinary skill in the art to have determined the optimum value of a cause effective variable such as the mercury intrusion volume (i.e. porosity) through routine experimentation, especially given the teaching regarding the importance of optimizing the pores for proper ink/pencil absorption in Okumura et al. above. It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant(s) invention to modify the device of Kurabayashi et al. to use an ink absorbing layer meeting applicant(s) claimed mercury intrusion volume (i.e. porosity), since the optimization of a known cause-effective variable is within the capabilities of one having ordinary skill in the art.

Response to Arguments

12. The rejection of claims 27 and 28 under 35 U.S.C § 102 - Liu e al.

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

The above noted rejection has been withdrawn in view of applicant(s) arguments, which have been found persuasive. Specifically, applicant(s) argue that aluminum

Art Unit: 1773

silicates do not include "fumed alumina particles" (*pages 5 – 6*), which is deemed to not be anticipated, nor rendered obvious, by the above noted rejection.

13. The rejection of claims 1 – 5, 29 – 30, 33, 46 - 51 and 54 - 57 under 35 U.S.C § 102(e) or 35 U.S.C § 103(a) - Yoshida et al.

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

The above noted rejection has been withdrawn because applicant(s) amendment(s) have set forth new limitations (e.g. ink-jet recording medium) no longer anticipated, nor rendered obvious, by the above noted rejection. The Examiner deems that the pre-amble limitation "ink-jet recording medium" provides sufficient structural distinction over a magnetic recording medium to adequately distinguish over the above noted rejection.

14. The rejection of claims 1 - 5, 7, 29 – 30, 33 and 44 - 57 under 35 U.S.C § 103(a) - Imabeppu et al., alone or in combination with Kijimuta et al.

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

The above noted rejection has been withdrawn because applicant(s) amendment(s) have set forth new limitations (e.g. ink-jet recording medium) no longer anticipated, nor rendered obvious, by the above noted rejection. The Examiner deems that the pre-amble limitation "ink-jet recording medium" provides sufficient structural

Art Unit: 1773

distinction over a magnetic recording medium to adequately distinguish over the above noted rejection.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Warner et al. (U.S. Patent No. 6,114,022) teach ink-jet recording media using fumed *silica* as an ink-absorbing particle (*highlighted sections*). Pekala (U.S. Patent No. 6,025,068) teaches the equivalents of silica and alumina particles for ink-jet recording media (*col. 7, line 11 bridging col. 8, line 50*), as well as that in coating compositions, the particles generally comprise greater than 20 weight percent (*col. 8, lines 45 – 65*).

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (703) 308-1737. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

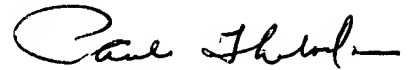
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Art Unit: 1773

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.



KMB
May 1, 2003



Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700